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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,839	11/18/2003	Brian S. Appel	10281-014-999	7045
24341 7590 04/04/2007 MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE 3000 EL CAMINO REAL PALO ALTO, CA 94306			EXAMINER BOYER, RANDY	
			ART UNIT	PAPER NUMBER
			1764	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/04/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/716,839	<b>Applicant(s)</b> APPEL ET AL.	
	<b>Examiner</b> Randy Boyer	<b>Art Unit</b> 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 4, 7, 10 and 12 is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :10 March 2004 and 17 March 2004.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I in the reply filed on 7 February 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 14-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made without traverse in the reply filed on 7 February 2007.

### ***Claim Objections***

3. Claims 4, 7, and 10 are objected to for lack of antecedent basis in the claims.
4. With respect to dependent claims 4, 7, and 10, all recite the limitation "said heater" or "the heater." There is insufficient antecedent basis for this limitation in the claims or in independent claim 1 from which the claims depend. Appropriate correction is required.
5. Claim 12 is objected to for improper use of the English language.
6. Claim 12 as submitted reads, in relevant part, ". . . a second auger a second auger communicating with said solids, . . .". It appears as though Applicant has duplicated the claim language "a second auger" as recited in line 8 of the claim.

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Examiner suggests correction by striking the second recitation of the reference to "a second auger" from the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Baskis (US 5360553).

9. With respect to claim 1, Baskis discloses an apparatus for converting an organic liquor into a mixture of hydrocarbons, and carbon solids, comprising: (a) a heating vessel (23) configured to receive and heat the organic liquor to produce a mixture of liquid and vaporized oil; (b) a reactor (28) configured to receive and convert the mixture of liquid and vaporized oil into carbon solids and a mixture of hydrocarbon vapors and gases; (c) a first cooler (31) for accepting the carbon solids; and (d) a second cooler (19) for accepting the mixture of hydrocarbon vapors and gases.

10. With respect to claim 2, Baskis discloses wherein the reactor is an auger (column 6, lines 53-57).

11. With respect to claim 3, Baskis discloses wherein the auger is heated to a temperature between about 400°C and about 600°C (column 3, lines 40-41).

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12. With respect to claim 4, Baskis discloses wherein the heater (23) comprises a vessel with a number of tubes (24) inside the vessel that promote efficient heat exchange.

13. With respect to claim 5, Baskis discloses wherein the first cooler is an auger (column 3, 45-52).

14. With respect to claim 6, Baskis discloses wherein the apparatus further comprises a storage system (32) for accepting the carbon solids from the first cooler.

15. With respect to claim 7, Baskis discloses wherein the apparatus further comprises one or more preheaters (18) for heating the organic liquor prior to transferring the organic liquor to the heater.

16. With respect to claim 11, Baskis discloses wherein the second cooler comprises a carbon particulate separator (183).

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claims 10, 12, and 13 are rejected under 103(a) as being unpatentable over Baskis (US 5360553).

21. With respect to claim 10, Baskis discloses an apparatus for converting an organic liquor into a mixture of hydrocarbons, and carbon solids, comprising: (a) a heating vessel (23) configured to receive and heat the organic liquor to produce a mixture of liquid and vaporized oil; (b) a reactor (28) configured to receive and convert the mixture of liquid and vaporized oil into carbon solids and a mixture of hydrocarbon vapors and gases; (c) a first cooler (31) for accepting the carbon solids; and (d) a second cooler (19) for accepting the mixture of hydrocarbon vapors and gases.

Baskis does not disclose wherein the heater is additionally configured to accept steam in addition to the mixture of liquid and vaporized oil.

However, Baskis discloses a second embodiment of his invention in which the organic liquor is preheated prior to entering the heating vessel by means of countercurrent flow of the organic liquor through a double pipe heat exchanger where steam is used as the heating fluid (see Baskis, column 6, lines 23-35). Likewise, Baskis provides for preheating of the organic liquor prior to entering the heating vessel in a first embodiment of his invention (see Baskis, column 3, lines 1-14).

Therefore, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to modify the apparatus of Baskis to provide for the admission of steam in the heating vessel so as to provide further heating of the mixture of liquid and vaporized oil.

22. With respect to claim 12, Baskis discloses an apparatus comprising: (a) a vessel (147) having an inlet and an outlet; (b) a first, heated auger (120) having an inlet (118) and an outlet (121), the inlet and outlet being configured and dimensioned to permit higher pressure to be applied in the first auger, the first auger inlet communicating with the vessel outlet; and (c) a fluid-solid separator (128) communicating with the first auger outlet, the separator having a first outlet (176) for liquids and gases and a second outlet (175) for solids.

Baskis does not disclose an apparatus wherein the vessel is heated, or wherein the apparatus comprises a second auger communicating with the solids.

However, Baskis discloses wherein process liquid and material are heated upon exiting the vessel and before entering a first heated auger (see Baskis, column 6, lines 21-42). Thus, the disclosure of Baskis provides for the entry of a heated mixed process



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stream into a first heated auger – the same as for Applicant's invention. Moreover, Baskis discloses an auger (31) communicating with solids exiting a fluid-solid separator in a first embodiment of his invention.

Therefore, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to modify the apparatus of Baskis to provide for a heated vessel and a second auger communicating with the solids exiting from a fluid-solid separator.

23. With respect to claim 13, Baskis discloses a condenser (177) communicating with the separator first outlet.

24. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baskis (US 5360553). Alternatively, claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baskis in view of Lee (US 5466383).

25. With respect to claim 8, Baskis discloses an apparatus for converting an organic liquor into a mixture of hydrocarbons, and carbon solids, comprising: (a) a heating vessel (23) configured to receive and heat the organic liquor to produce a mixture of liquid and vaporized oil; (b) a reactor (28) configured to receive and convert the mixture of liquid and vaporized oil into carbon solids and a mixture of hydrocarbon vapors and gases; (c) a first cooler (31) for accepting the carbon solids; and (d) a second cooler (19) for accepting the mixture of hydrocarbon vapors and gases.

Baskis does not disclose wherein the apparatus comprises an air lock between the reactor and the first cooler.

However, rotary air lock valves are well known in the art as a means of conveying dry process materials. See *generally*, Raymus, "Handling of Bulk Solids and Packaging of Solids and Liquids", in PERRY'S CHEMICAL ENGINEERS' HANDBOOK, 7th ed. (1997), pp. 21-5 – 21-10. In addition, Lee discloses a process and apparatus for treating dried sludge, wherein an air lock valve is used at the exit of an auger reactor so as to prevent the backflow of air into the reactor (see Lee, column 2, lines 39-45).

Therefore it would have been obvious to the person having ordinary skill in the art at the time the invention was made to modify the apparatus of Baskis to provide for use of air locks between the reactor and first cooler in order to (1) assist in the conveyance of carbon solids from the reactor and (2) prevent the backflow of air from the cooler into the reactor.

26. With respect to claim 9, Lee discloses the conveyance of dry process material through an air lock and into a storage system (see Lee, column 4, lines 66-67).

### ***Conclusion***

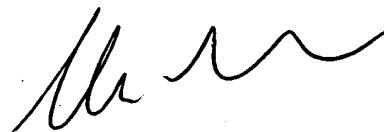
27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB



GLENN A. CALDAROLA  
PRIMARY EXAMINER  
~~GROUP 1100~~

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